throttle lever 26 so as to open the throttle, the engine is automatically reconverted to a two-cycle engine, and the switch 21 becomes inoperative, although the arm 21ª is continuously rotated by the engine.

By converting the engine from a two-cycle to a four-cycle engine, it will not be necessary on throttling down the engine to open the needle valve to obtain an excess of gasolene, and instead of igniting a single small charge of an exceedingly rich mixture, I supply to the cylinder during the two strokes of the piston, two charges of a leaner mixture, and in this manner I obtain a charge which is more satisfactory and more effective and reliable for ignition than a smaller charge richer with gasolene. While it is true that on the completion of the downward stroke of the piston a part of the charge which had been previously admitted to the cylinder and compressed during the inactive compression stroke, is lost, nevertheless enough of the charge remains in the cylinder to form with the next charge admitted, a charge which is much more effective and more reliable than the charge in a cylinder of an ordinary two-cycle engine when throttled down to obtain a slow speed.

Having thus described my invention, what I claim is:

1. In combination with a two-cycle internal combustion engine, an ignition system for causing ignition in a cylinder of the engine at each compression stroke comprising a member adapted to be driven by the engine at a constant speed ratio, and means for restricting the ignition to one of a number of compression strokes without altering the speed ratio of said member and of the engine.

2. In combination with a two-cycle internal combustion engine, an ignition system for causing ignition in a cylinder normally at each compression stroke comprising a member adapted to be driven by the engine at a constant speed ratio, and means for preventing ignition in the cylinder at each alternate compression stroke without altering the speed ratio of said member and of the engine.

3. A two-cycle internal combustion engine having means for causing an igniting arc in a cylinder at each compression stroke of the piston, or at each alternate compression stroke, said means comprising an ignition system and a switch for rendering the system inoperative at each alternate compression stroke.

4. A two-cycle internal combustion engine having ignition apparatus for causing ignition in a cylinder normally at each compression stroke of the piston, or at each alternate compression stroke when the engine is throttled a predetermined amount.

5. A two-cycle internal combustion engine having ignition apparatus for causing an igniting arc in a cylinder at each compression stroke of the piston when the engine is operating at normal speed, or at each alternate compression stroke when the speed is decreased by throttling the engine.

6. A two-cycle internal combustion engine having an ignition system for causing ignition in a cylinder at each compression stroke of the piston, and means for changing the number of ignitions in a series of compression strokes as the engine is throttled.

7. In combination with a two-cycle engine, an ignition system for normally causing an igniting arc in a cylinder at each compression stroke of a piston, and means for preventing the formation of an igniting arc at alternate compression strokes.

8. In combination with a two-cycle engine, an ignition system for normally causing an igniting arc in a cylinder at each compression stroke, and means for preventing the formation of an arc at alternate compression strokes when the engine is throttled, comprising a switch which periodically renders the ignition system inactive.

9. In combination with a two-cycle engine, an ignition system for normally causing an igniting arc in a cylinder at each compression stroke, and means for preventing the formation of an arc at each alternate compression stroke when the engine is throttled comprising a rotating grounding switch connected to the ignition system and adapted to periodically render the system inoperative.

In testimony whereof, I hereunto affix my signature in the presence of two witnesses.

JOSEPH A. WILLIAMS. [L. S.]

Witnesses:
H. R. SULLIVAN,
A. F. KWIS.